(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 063 196 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
27.05.2009 Bulletin 2009/22

(21) Application number: **07121306.0**

(22) Date of filing: **22.11.2007**

(51) Int Cl.:
F24F 13/075 *(2006.01)* ***F24F 13/08*** *(2006.01)*
E06B 7/082 *(2006.01)*

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(71) Applicant: **Vipco Systems N.V.**
8620 Nieuwpoort (BE)

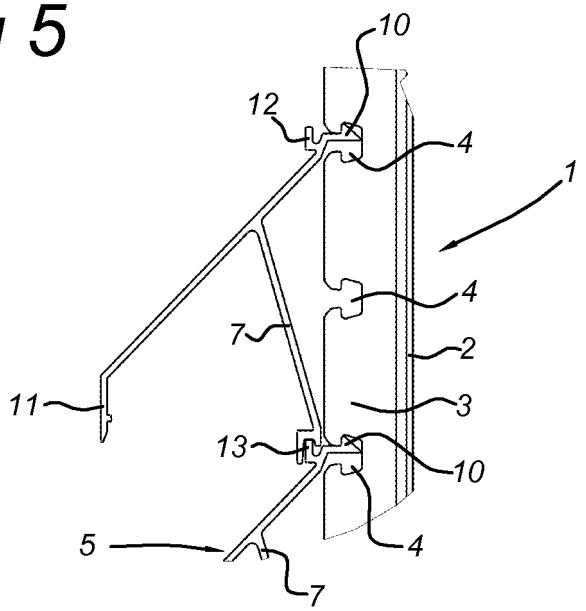
(72) Inventor: **Renson, Luc Louis**
8620, Nieuwpoort (BE)

(74) Representative: **van Westenbrugge, Andries**
Nederlandsch Octrooibureau
Postbus 29720
2502 LS Den Haag (NL)

(54) Louvre system, and method for manufacturing a louvre unit for such system

(57) A louvre system for a ventilator comprises a series of parallel louvre units each with at least one louvre and at least one support which is permanently fixed to, or integral with, a louvre. The louvres are at a distance from each other and enclose ventilation gaps; support members are provided by means of which the louvre units are supported. The louvre units each have at least one mounting part and the support members have support parts. Each mounting part of a louvre unit is mounted onto a support part of the support members. The invention is also related to a method for manufacturing a louvre unit for the louvre system.

Fig 5



EP 2 063 196 A1

Description

[0001] The invention is related to a louvre system for a ventilator, comprising a series of parallel louvre units each with at least one louvre and at least one support which is permanently fixed to, or integral with, a louvre, the louvres being at a distance from each other and enclosing ventilation gaps, as well as support members by means of which the louvre units are supported

[0002] Such a louvre system is disclosed in British patent application 2.126.707. Said prior art publication comprises parallel louvre blades which are inclined to the vertical. Moreover, there is a horizontal guard mesh located between said blades. Each louvre blade is attached separately to the support members through respective holders. The guards and each provided with a plurality of apertures, for permitting an air flow.

[0003] The louvre system in question is intended to be mounted in front of the ventilation opening of the building. To that end, first of all the support members have to be mounted on to the building. Subsequently, said support members have to be equipped with a series of holders. Next, each louvre blade is attached separately to a row of holders next to each other on neighbouring support members. The disadvantage of such a layout is that the process of assembling the great number of different parts is time-consuming and cumbersome. The costs of the louvre system according to said prior art document and therefore too high, in particular as a result of the fairly large amount of labour costs.

[0004] Furthermore a louvre system is known which comprises the frame into which the louvre units are stacked upon each other. The disadvantage of this prior art louvre system is that the length dimension of the louvres cannot be very large. This caused by the fact that the louvres are only supported at the opposite ends, but not at locations in between said ends.

[0005] The object of the invention is therefore to provide a louvre system which does not have these disadvantages and which can be assembled in a more expedite and therefore less costly way. This object is achieved by providing louvre units which each have at least one mounting part, wherein the support members have support parts and wherein each mounting part of a louvre unit is mounted onto a support part of the support members. Such louvre system can be attached in a more simple way to the support members. It is not necessary to first of all connect separate support means, such as hooks, to the support members, and then, in a second step, to apply the louvres to the support members. Instead, the louvre units themselves, including the support, can be connected to the support members in one and the same step which makes the assembly of the louvre system easier and less costly.

[0006] A further rationalisation of the process of assembling the louvres system can be obtained in case the louvre a units each comprise at least two neighbouring louvres and an intermediate member by means of which the louvres are permanently interconnected.

[0007] The provision of louvre units which each comprise two or even more preassembled or permanently attached louvre blades has the advantage that in the process of assembling the louvres system even less separate components have to be dealt with. In fact, complete arrays of two or more louvre blades can be mounted in one time to the support members, thus reducing the labour time and labour costs involved drastically. Moreover, the louvres system is obtained has a very high strength and rigidity, as a result of the interconnection between neighbouring louvre blades.

[0008] The connection between the louvre units and the support members can be obtained in different ways. For instance, the mounting parts and the support parts may comprise hooks. In particular, said mounting parts and the support parts may comprise undercut cavities. A very easy way of assembling of the louvre system is obtained in case the mounting parts and the support parts are carried out as click means allowing elastic deformation during the process of mounting. By pressing the louvre units onto the support members, a certain elastic deformation of the mounting means is obtained and the final connection is established as soon as the louvre units and support members produce a click.

[0009] In this connection, it can also be ensured that the mounting parts and the support parts are under pretension in the mounted state. The advantage of a pretension in the mounting between louvre units and support members is that a rattle free system is obtained.

[0010] According to a further preferred embodiment, the support members each may have a flange which is oriented transversely with respect to the plane as defined by the louvres, the support parts being arranged on the flange. In this connection, the support parts may be carried out as undercut cavities which open out at the free edge of the flange.

[0011] The louvres have a free end and a mounting end, said mounting end being provided with a mounting part. In particular, the mounting end of the louvres may be carried out as a hook. As mentioned before, said hooks of the louvres can be clicked into the corresponding undercut cavities.

[0012] The louvre units are not only to be connected to the support members, but can also be mutually connected. To that end, a support has a free end provided with connecting means, the opposite side of the louvre unit having counter connecting means, in such a way that the connecting means and the free end of a support of one louvre unit are connected to the counter connecting means of a neighbouring louvre unit.

[0013] The louvre units themselves can be carried out in various ways as well. According to a first possibility, the louvre unit may comprise a single louvre and a single support integrally or permanently connected thereto. According to a second possibility, the louvre unit may comprise two neighbouring louvres and an intermediate support, by means of which intermediate support the louvres

are permanently or integrally interconnected. Such louvre unit which comprises two neighbouring louvres and an intermediate support may comprise two hooks which face away from each other or which face each other.

[0014] Furthermore, the louvre unit with at least two louvres has a further support which is permanently or integrally connected to one of the louvres at the side thereof facing away from the connecting support, said further support having a free edge provided with connecting means.

[0015] The supports of the louvre units louvre units can be carried out in several ways as well. In particular, the support can be carried out as a web provided with ventilation openings.

[0016] Furthermore, the louvre blade(s) and the web can be carried out as a single profile, for instance a profile obtained by means of extrusion. According to a further possibility, the louvre blade(s) and the intermediate member such as a web can be permanently connected to each other by means of welding, soldering, gluing et cetera.

[0017] The openings in the web provided the required ventilation. These openings can be carried out in different ways as well. According to a first possibility, the ventilation openings are of a longitudinal shape, the longitudinal direction of said openings being oriented transverse with respect to the longitudinal direction of the louvres. According to the second possibility, the ventilation openings can be of a square shape. Any desired shaped shape provides the required ventilation capacity is of course possible.

[0018] The orientation of the support web can be selected in different ways as well. According to a preferred embodiment, in a louvre system wherein the louvres each have a free end and a connection end which is supported with respect to the support members, the web extends between the parts of the louvres next to or at the connection ends thereof.

[0019] The invention is furthermore related to a method for manufacturing a louvre unit for use in the louvre system as described before. Said method comprises the steps of:

- obtaining a half product by means of extrusion, said half product consisting of at least one louvre and a web,
- providing holes in the web.

[0020] Such process can be applied for obtaining a louvre unit having two louvres and an interconnecting web as well. In particular, the holes in the web can be obtained by means of punching.

[0021] The invention will now further be described with reference to an embodiment of the louvre system as shown in the drawings.

Figure 1 shows a rear view of the louvre system according to the invention.

Figure 2 shows a rear view of a first embodiment of the louvre unit for the louvre system according to figure 1.

Figure 3 shows a rear view of a second embodiment of the louvre unit for the louvre system according to figure 1.

Figure 4 shows a cross-section of the louvre system according to the invention.

Figure 5 shows an enlarged view of detail V of figure 4.

[0022] The louvre system as shown in figure 1 comprises mounting profiles 1, which have to be mounted on a wall over a ventilation opening therein. Said mounting profiles 1 consist of a base plate 2 and a flange 3 provided with regularly spaced undercut cavities 4. It will be clear that several of these mounting profiles 1 are arranged next to each other at regular intervals, the number of mounting profiles 1 depending on the length of the louvre units 5 described below and the required stability of the louvre system.

[0023] Furthermore, the louvre system consist of louvre units 5, which are shown in disassembled state in figure 2 and 3. The louvre units 5 according to figure 2 each consist of two louvres 6, interconnected by means of an intermediate web 7. The louvre unit according to figure 3 comprises a single louvre 6 and a single web 7. Each web 7 may have a series of longitudinal openings 8, or square openings 9, or a combination thereof. Of course, any type of opening will do provided the required ventilation capacity is obtained.

[0024] Each louvre unit 5 which has two louvres 6 is provided with two connecting hooks 10, which are hooked in the undercut cavities 4. These connecting hooks 10 are provided at the connecting end of each louvre 6. Furthermore, the upper edge of each louvre unit 5 is provided with an upwardly extending lip 12; the free end of the lowermost web 7 is provided with the downwardly extending U-shaped cavity 13. The upwardly extending lip 12 is accommodated within said downwardly extending U-shaped cavity 13, whereby a firm interconnection of the neighbouring louvre units 5 is obtained.

[0025] In addition to the twin louvre units 5, single louvre units 15 may be provided, which consist of a single louvre 6 and a single web 7. These louvre units 15 are provided with an upwardly extending lip 12 and a downwardly extending U-shaped cavity 13 as well.

Claims

1. Louvre system for a ventilator, comprising a series of parallel louvre units (5, 15) each with at least one louvre (6) and at least one support (7) which is permanently fixed to, or integral with, a louvre (6), the louvres (6) being at a distance from each other and enclosing ventilation gaps, as well as support members (1) by means of which the louvre unit (5, 15) are supported, **characterised in that** the louvre

units (5, 15) each have at least one mounting part (10), **in that** the support members (1) have support parts (4) and **in that** each mounting part (10) of a louvre unit (5) is mounted onto a support part (4) of the support members (1).

2. Louvre system according to claim 1, wherein the mounting parts (10) and the support parts (4) comprise hooks.

3. Louvre system according to claim 1 or 2, wherein the mounting parts (10) and the support parts comprise undercut cavities (4).

4. Louvre system according to any of the preceding claims, wherein the mounting parts (10) and the support parts (4) are carried out as click means allowing elastic deformation during the process of mounting.

5. Louvre system according to any of the preceding claims, wherein the mounting parts (10) and the support parts (4) are under pretension in the mounted state.

6. Louvre system according to any of the preceding claims, wherein the support members (1) each have a flange (3) which is oriented transversely with respect to the plane as defined by the louvres, the support parts (4) being arranged on the flange (3).

7. Louvre system according to claims 3 and 6, wherein the support parts are carried out as undercut cavities (4) which open out at the free edge of the flange (3).

8. Louvre system according to any of the preceding claims, wherein the louvres (6) have a free end and a mounting end, said mounting end being provided with a mounting part (10).

9. Louvre system according to claims 2 and 8, wherein the mounting end of the louvres (6) is carried out as a hook (10).

10. Louvre system according to claims 7 and 8, wherein the hooks (10) of the louvres (6) are clicked into the corresponding undercut cavities (4).

11. Louvre system according to any of the preceding claims, wherein a support (7) has a free end provided with connecting means (13), the opposite side of the louvre unit (5, 15) having counter connecting means (12), in such a way that the connecting means (13) and the free end of a support (7) of one louvre unit (5, 15) are connected to the counter connecting means (12) of a neighbouring louvre unit (5, 15).

12. Louvre system according to any of the preceding claims, wherein at least one louvre unit (5) comprises two neighbouring louvres (6) and an intermediate support (7), by means of which intermediate support (7) the louvres (6) are permanently or integrally interconnected.

13. Louvre system according to claim 12, wherein the louvre unit (5) which comprises two neighbouring louvres (6) and an intermediate support (7) comprises two hooks (10) which face away from each other or which face each other.

14. Louvre system according to claims 12 or 13, wherein a further support (7) is permanently or integrally connected to one of the louvres (6) at the side thereof facing away from the intermediate support (7), said further support (7) having a free edge provided with connecting means (13).

15. Louvre system according to any of the preceding claims, wherein a support (7) comprises a web provided with ventilation openings (8, 9).

16. Louvre system according to claim 15 , wherein the ventilation openings (8) are of a longitudinal shape, the longitudinal direction of said openings (8) being oriented transverse with respect to the longitudinal direction of the louvres (6).

17. Louvre system according to claim 15 or 16, wherein the ventilation openings (9) are of a square shape.

18. Louvre system according to any of the preceding claims, wherein each louvre unit (5) is carried out as a single profile.

19. Louvre system according to any of the preceding claims, wherein the free ends of the louvres (6) each point towards a neighbouring louvre (6).

20. Louvre system according to any out the preceding claims, wherein the louvre units (5, 15) comprise interconnecting means (12, 13) for interconnecting neighbouring louvre units (5, 15).

21. Method for manufacturing a louvre unit for the louvre system according to any of the preceding claims, comprising the steps of:

- obtaining a half product by means of extrusion, said half product consisting of two louvres and an interconnecting web,
- providing holes in the web.

22. Method according to claim 21, comprising the step of:

- providing holes in the web by means of punching.

Fig 1

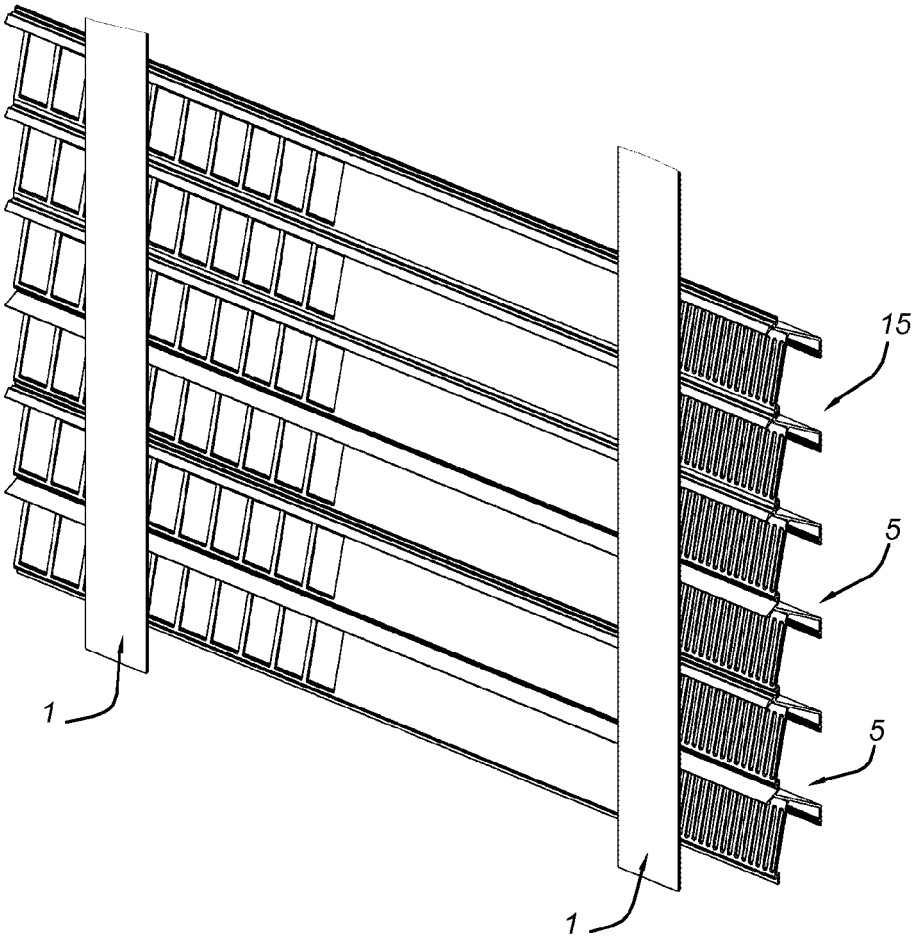


Fig 2

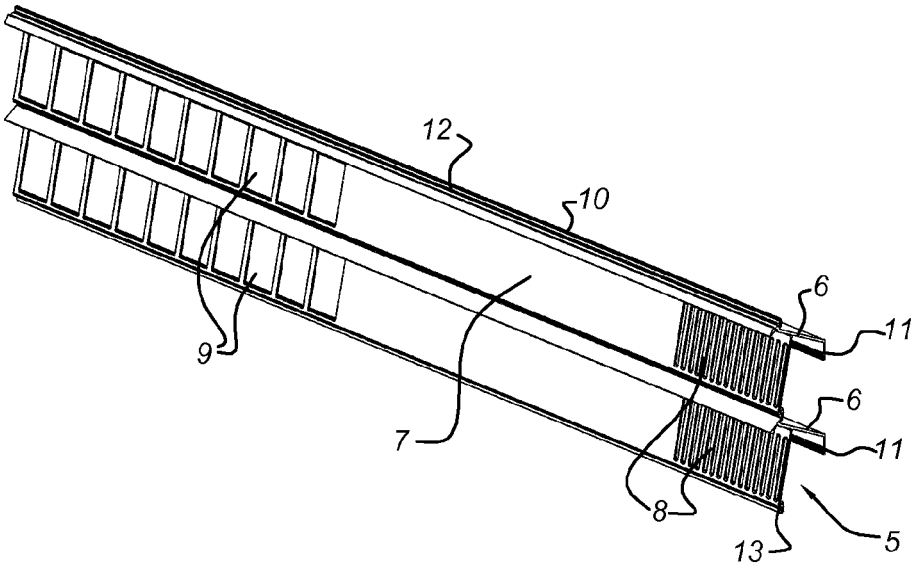


Fig 3

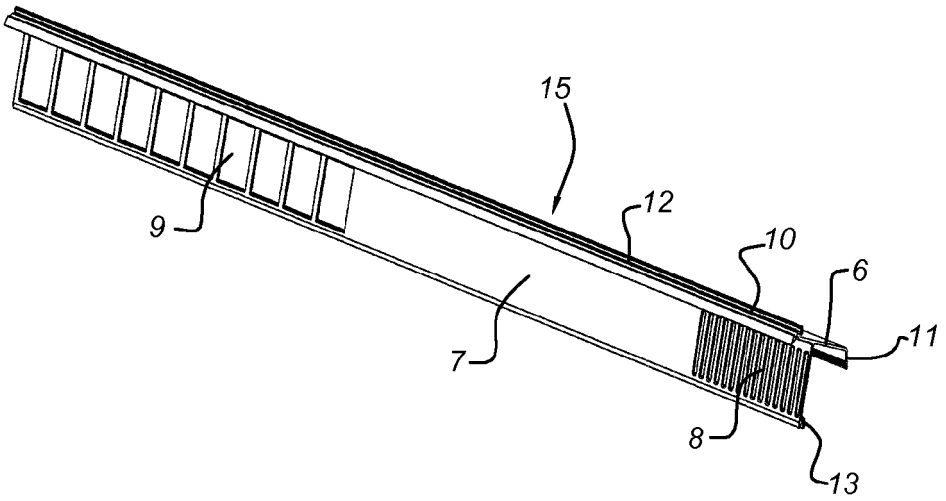


Fig 4

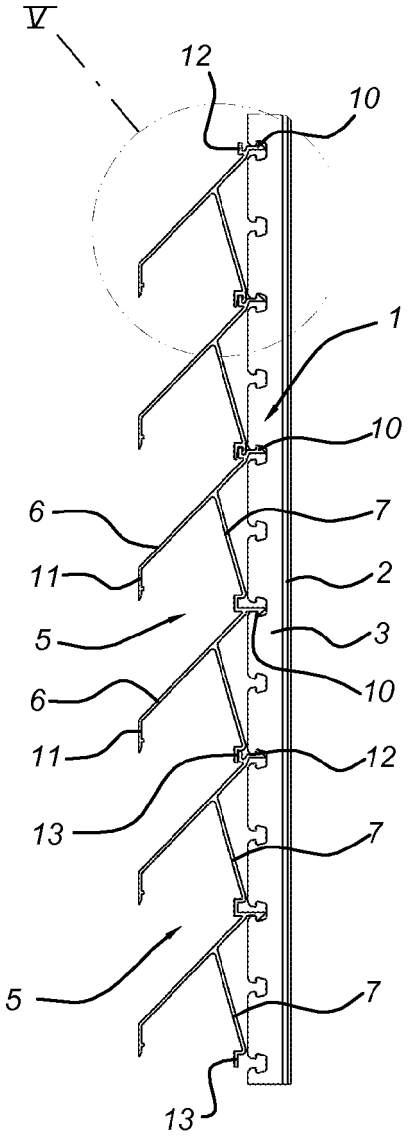
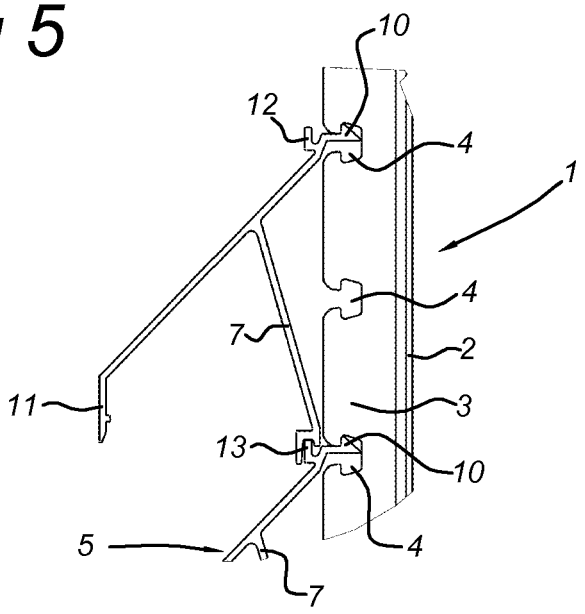


Fig 5



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 12 1306

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 451 180 A (STRUBEN FRANCIS L) 24 June 1969 (1969-06-24) * column 2, line 26 - line 47; figures 2,3 *	1-22	INV. F24F13/075 F24F13/08 E06B7/082
X	US 4 733 515 A (SCHMIDLIN HANS [CH]) 29 March 1988 (1988-03-29) * the whole document *	1-22	
A	US 5 255 486 A (WANG DAVID [TW]) 26 October 1993 (1993-10-26) * the whole document *	1-22	
A,D	GB 2 126 707 A (GREENWOOD AIRVAC VENTILATION) 28 March 1984 (1984-03-28) * the whole document *	1-22	
			TECHNICAL FIELDS SEARCHED (IPC) F24F E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	26 March 2008	González-Granda, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 12 1306

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-03-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3451180 A	24-06-1969	NONE	
US 4733515 A	29-03-1988	DE 3510461 C1	30-10-1986
		DE 8508631 U1	06-08-1987
		WO 8605573 A1	25-09-1986
		EP 0199025 A1	29-10-1986
		JP 7107347 B	15-11-1995
US 5255486 A	26-10-1993	NONE	
GB 2126707 A	28-03-1984	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- GB 2126707 A **[0002]**